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PATENT SPECIFICATION

DRAWINGS ATTACHED

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COMPLETE SPECIFICATION

Horizontally Extending Flat Conveying Channel for instance for Letters in Assorting Systems

WE, STANDARD TELEPHONES AND CABLES LIMITED, a British Company, of Connaught House, 63 Aldwych, London, W.C.2., England, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:

This invention relates to a horizontally-extending flat-type conveying channel for individual flat articles, such as letters, such as is used in a sorting system.

In such a sorting system, several diverters are arranged along the channel so that the articles can be switched out of the channel into other channels or into receptacles, according to marks on them which may be recognized, for instance, photo-electrically. This invention seeks to provide a simple channel for such articles where the receptacles or channels to which diversion is called for are below the channel.

According to the invention there is provided a horizontally-extending flat-type conveying channel for flat articles, such as letters in a sorting system, which channel has a bottom surface along which said articles are conveyed, in which said bottom surface is interrupted by diverters leading downward from said channel, in which pushers are provided to urge said articles along said channel and through said bottom surface when a diverter has been operated, which pushers are mounted on endless chains or the like so as to move along said channel in the conveying direction, in which guide plates are provided to limit said channel at the top, and in which said guide plates are connected to and movable with said chains and said pushers, whereas said bottom surface is stationary.

An embodiment of the invention will now be described with reference to the accom-

panying drawing, in which Fig. 1 shows in side view and partly sectioned part of a channel embodying the invention, while Fig. 2 is an enlarged cross-section along the line A-B of Fig. 1.

Referring first to Fig. 1, the conveying channel 1 is limited at its bottom side by a guide surface 2, which guide surface is interrupted at intervals (either regular or non-regular) and at these interruptions diverter blades 3 are provided. These blades, depending on their position, when operated cause an article S on the conveying route either to remain or to be dropped out of the channel. The articles S are driven along by pushers 8 which, as shown in Fig. 2, are pivoted in groups at certain distances, each group on a common axle 7. Each such axle is attached at each end to a roller chain 6, these chains moving in separate guides. The conveying channel is limited at its top by guide plates 5, which are also fixed to the axles 7, and are moved with the pushers in the conveying direction. One side of the conveying channel is closed by a lateral, fixed guide metal sheet indicated at the left hand side of Fig. 2. The other side of the channel has no such guide. Springs 10 on each axle 7 ensure that the pushers in their operative position are substantially vertical. If the pushers push against a hindrance, they are swivelled against the pressure of the springs 10, in the opposite direction to the conveying direction, which causes one of the pushers 8 to actuate a contact unit 21, mounted on part of the structure (not shown) of the equipment.

Located centrally between successive sets of pushers 8 there are press pads 9, which are fixed to axles similar to those carrying the pushers, which pads are kept by a slight spring pressure in a certain position in which they press on the bottom guide

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surface 2 or against an article being conveyed, to keep it in the correct position in the channel. The distance between two pushers is always larger than the maximum length of an article to be conveyed, measured in the conveying direction, while the width of the conveying channel is adapted to the maximum width of the articles conveyed.

10 Fig. 1 shows at the right end, i.e. at the input end of the conveying channel, a converting device for the press pads 9. This device has guides or control disks 16 which co-operate with the cam-shaped ends of the 15 press pads 9 such as to swivel them out of the conveying channel against their springs. This enables the articles S to be handled to be placed on the channel's surface 2 by conveying belts 11 when entering the conveying system. The articles are pressed towards the sliding surface by the press pads when they are moved by the pushers. The rollers 12 for the belts 11 are mounted on supporting levers 13, and a spring 15 serves 25 to keep an article to be conveyed in place till it is engaged by a pusher.

The diverter blades 3 mentioned above are each arranged above a container. They are actuated by an electro-magnetic drive 30 which in turn is controlled by means (not shown) which responds to marks on the articles. Thus in a letter sorting machine the marks are postal codes indicating the areas to which the latter are destined, and 35 the containers thus collect letters for the various areas. It is convenient to accommodate the diverter arrangements with the drive and the electrical connections in a separate frame 19 which can be inserted 40 from the side into guides 20 underneath the conveying channel. This arrangement is of particular advantage for maintenance, in order to quickly eliminate troubles by replacing such a slide-in frame.

45 WHAT WE CLAIM IS:

1. A horizontally-extending flat-type conveying channel for flat articles, such as letters in a sorting system, which channel has a bottom surface along which said 50 articles are conveyed, in which said bottom surface is interrupted by diverters leading downward from said channel, in which pushers are provided to urge said articles along said channel and through said bottom 55 surface when a diverter has been operated, which pushers are mounted on endless chains or the like so as to move along said

channel in the conveying direction, in which guide plates are provided to limit said channel at the top, and in which said guide 60 plates are connected to and movable with said chains and said pushers, whereas said bottom surface is stationary.

2. A conveying channel as claimed in claim 1, and in which said chains or the 65 like also carry press pads which press from above on the articles being conveyed.

3. A conveying channel as claimed in claim 2, and in which said press pads are each located midway between two succeeding ones of said pushers in the direction in which said articles are conveyed.

4. A conveying channel as claimed in claim 1, 2 or 3, and in which said pushers and/or said press pads are in pairs or in 75 pluralities side by side on common supports.

5. A conveying channel as claimed in claim 4, in which said common supports are axles each of which extends across the channel and has each of its ends supported 80 by one of said chains or the like; and in which said pushers and said press pads are each pivoted on one of said axles against the urging of spring means.

6. A conveying channel as claimed in 85 claim 2, and in which each press pad has a cam which co-operates with guide rails at the ends of the channel, so as to allow articles to enter the channel at its input end and to leave the channel at its output end. 96

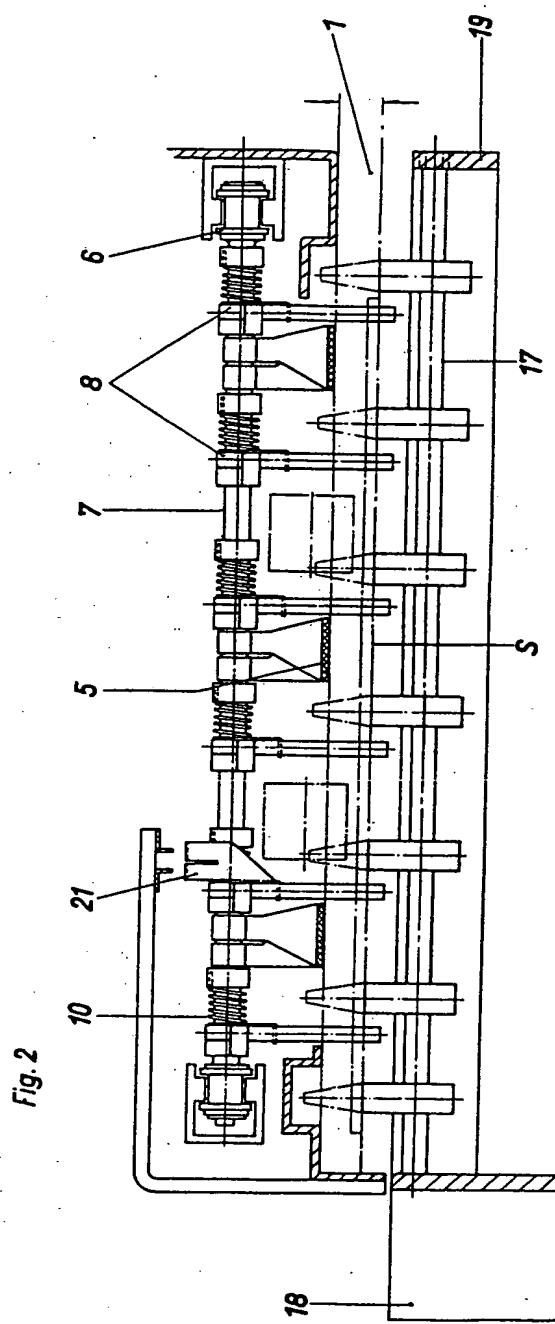
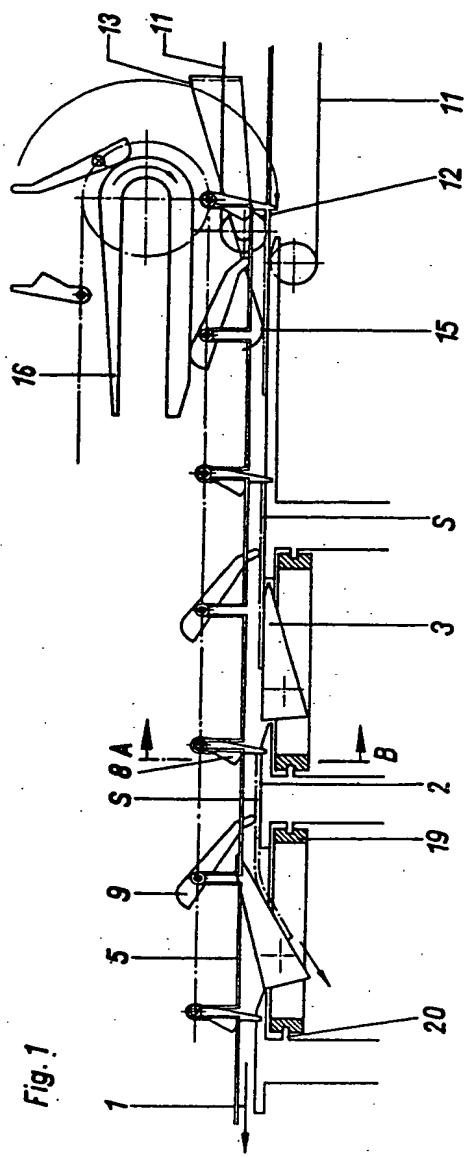
7. A conveying channel as claimed in claim 5, and in which said guide plates are formed of flexible strips each with clamping means to clamp it to said axles.

8. A conveying channel as claimed in 95 claim 4 or 5, in which each said pusher, or at least one pusher of each said set on one of said supports, can co-operate with an electrical contact when that pusher strikes an obstacle.

9. A conveying channel as claimed in any preceding claim, and in which each said diverter with the operating mechanism therefor and electrical connections thereto forms a separate component.

10. A horizontally-extending flat type conveying channel for flat articles, such as letters in a sorting system, substantially as described with reference to the accompanying drawing.

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